

Factors Affecting Dry Bean Consumption in the United States

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Abstract: Total per capita dry bean consumption has increased markedly in the United States over the past two decades. However, little is known about the distribution of dry bean consumption across different marketing sectors, geographic regions, or population groups. Using data from USDA's 1994-96 Continuing Survey of Food Intakes by Individuals, this article examines the consumption distribution of cooked dry beans in the United States. The analysis indicates that cooked bean consumption is greatest in the southern and western areas of the country. About 55 percent of black beans, one of the fastest growing classes in terms of per capita use, are consumed in the southern region of the country. Although people of Hispanic origin represented approximately 11 percent of the population, they accounted for 33 percent of all cooked dry edible bean consumption. Relative to their share of the population, low-income consumers ate substantially more navy, lima, and pinto beans than those with greater means.

Keywords: Dry beans, consumption, per capita use, distribution, regions, pinto, navy.

There has been continuing interest in information regarding the consumption distribution of foods such as dry edible beans. Although a great deal is known about the supply side of the U.S. dry bean market, relatively little has been published about consumer demand. According to per capita disappearance data compiled by the U.S. Department of Agriculture's (USDA) Economic Research Service (ERS), dry bean demand has increased markedly over the past two decades. After peaking during World War II at 11 pounds per person, dry bean use began a steady decline. However, since bottoming out in the late 1970's and early 1980's, per capita use of dry edible beans has increased by one-third. During the most recent 3 years (1997-99) average use increased 28 percent over the 1987-89 period to 7.7 pounds (table A-1).

It has long been postulated that a combination of rising immigration (particularly among the Hispanic population), widespread interest in ethnic foods featuring cooked dry beans, and changes in America's dietary awareness and sophistication have contributed to rising per capita dry bean use. However, due to a lack of consumer research in this area, little is known about the who, what, where, and whys of cooked dry bean consumption. For example, who consumes black beans? Has the increasing Hispanic population influenced pinto bean demand? What proportion of dry edible bean prod-

ucts are purchased for at home versus away from home meals. These questions have largely gone unanswered.

The purpose of this article is to provide unique basic information about the market distribution of cooked dry beans using data from USDA's most recent individual food consumption survey. The article will first discuss the source of the data used in the analyses. The next sections will describe the distribution of cooked dry bean consumption by food source, region of the country, ethnic background, income class, and age and gender. Market distribution analyses will be presented for dry beans in the aggregate and also for several major bean classes, including pinto, navy, lima, black, and red kidney. Survey data for navy and white beans (which likely include Great Northern, navy, and small white beans) are combined since some consumers refer to navy beans as white beans (hereafter called navy beans).

Data and Methodology

USDA has conducted periodic surveys of household and individual food consumption in the United States since the 1930's (see box 1). The most recent survey, the 1994-96 Continuing Survey of Food Intakes by Individuals (CSFII)², conducted by USDA's Agricultural Research Service (ARS), provided the basis for this article. Each year of this 3-year

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² U.S. Department of Agriculture, Agricultural Research Service. 1998. 1994-96 Continuing Survey of Food Intake by Individuals and 1994-96 Diet and Health Knowledge Survey. CD-ROM. Available from National Technical Information Service, Springfield, VA.

Table A-1--U.S. dry edible beans: Per capita use, by type

Bean type	1987-89 average		1997-99 average		Percent change 1987-89 to 1997-99
	Pounds per capita	Percent of total	Pounds per capita	Percent of total	
Total dry beans	5.99	100.0	7.67	100.0	28
Pinto	2.59	43.2	3.60	46.9	39
Navy	1.20	20.0	1.26	16.4	5
Great Northern	.39	6.5	.40	5.2	3
All kidney	.37	6.2	.59	7.7	59
Light red	--	--	.43	5.6	--
Dark red	--	--	.15	2.0	--
Black	.04	.7	.49	6.4	1,125
All lima	.23	3.8	.22	2.9	-4
Baby lima	--	--	.10	1.3	--
Large lima	--	--	.12	1.6	--
Other 1/	1.17	19.5	1.11	14.5	-5
Blackeye	--	--	.27	3.5	--
Garbanzo	--	--	.22	2.9	--
Small white	--	--	.04	.5	--
Pink	--	--	.27	3.5	--
Small red	--	--	.19	2.5	--
Cranberry	--	--	.16	2.1	--

-- = not available. 1/ May not sum due to rounding.

Source: Economic Research Service, USDA.

data set comprises a nationally representative sample of non-institutionalized persons residing in 50 States and Washington, D.C.

In the 1994-96 CSFII, two nonconsecutive days of dietary data for individuals of all ages were collected 3 to 10 days apart through in-person interviews, between January 1994 and January 1997, using 24-hour recalls. The 3-year CSFII data set includes information on food and nutrient intakes by 15,303 individuals who provided dietary data for both days.

The respondents provided a list of foods consumed as well as information on where, when, and how much each food was eaten. Standardized probes were used to collect details on food descriptions and amounts of food eaten. The location where the food was purchased was coded into several categories. For each respondent, an array of economic, social, and demographic characteristics were also collected. This rich database enables researchers to estimate the market/consumption distribution of a food by numerous delineations.

Dry Bean Use

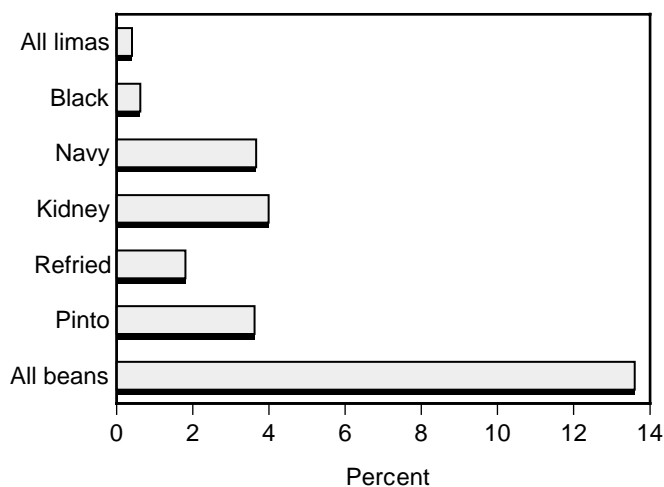
There are many types of dry edible beans, and USDA per capita disappearance data cover 14 specific classes (e.g. pinto, navy, black, etc.) plus an "all other" category (table A-1). Dry beans are used in an assortment of ways with similar uses possible for different varieties. All varieties are available dry in consumer or foodservice packages. Most varieties are also processed into canned products such as refried beans, soups, and baked beans. High starch bean flour is also produced from dry beans and used in a variety of baked goods. Restaurant use of dry beans and bean products also appear to have increased during the past 10-15 years, especially among those establishments serving such

dishes as tacos, burritos, and chili. During this time, several firms featuring Southwestern/Mexican cuisines have grown to become important national restaurant chains.

According to the CSFII, on any given day in the United States, nearly 14 percent of Americans consumed at least one food containing cooked dry beans (figure A-1). On any given day, pinto beans are used by nearly 4 percent of the population. Another 2 percent of the population reports that they consumed refried beans on any given day. Pinto beans are used in making canned refried beans as well as in many food dishes such as three-bean salads, soups (such as minestrone),

Figure A-1

Percent of consumers reporting dry bean use on any given day



Source: Economic Research Service, USDA.

USDA Food Consumption Data

USDA collects and compiles two major data sets on food consumption in the United States, the Supply and Utilization or food disappearance data, compiled by USDA's ERS, and the Continuing Survey of Food Intakes of Individuals, compiled by USDA's Agricultural Research Service. Both data sets are key components of ongoing Federal efforts to monitor the nutritional health and dietary status of U.S. consumers mandated by Congress under the National Nutrition Monitoring and Related Research Act of 1990. When used together, they provide a comprehensive picture of the Nation's eating habits.

Food Supply and Utilization Data, also known as food disappearance data, measures the flow of raw and semi-processed food commodities through the U.S. marketing system. They are neither a direct measure of actual consumption nor of the quantity of food actually ingested. The total amount available for domestic consumption is estimated as the residual after exports, industrial uses, seed and feed use, and year-end inventories are subtracted from the sum of production, beginning inventories, and imports. The use of conversion factors allows for some subsequent processing, trimming, spoilage, and shrinkage in the distribution system. However, the estimates also include residual uses for which data are not available (such as miscellaneous non-food uses, and changes in retail and consumer stocks).

With data going back to 1909 for most commodities, the food disappearance data are useful as indicators of trends over time. The data are most commonly used to measure the average level of food consumption in the country, to show year-to-year changes in consumption of major foods, to calculate the approximate nutrient content of the food supply, to establish long-term consumption trends, and to permit statistical analyses of effects of prices and income on food consumption. Because they include spoilage and waste accumulated through the marketing system and in the home, the data typically overstate actual consumption. A 1997 ERS study suggested that such losses may exceed 25 percent of the edible food supply.

Food disappearance data reflect the amount of major food commodities entering the market, regardless of their final use. Final product forms and consumption locations are not usually known and little or no data exist on supplies of further processed products. In short, relatively good information exists for many food ingredients, but not for foods as actually eaten. For example, the food disappearance data provide a good estimate of the annual per capita consumption of kidney beans but provide no information

on how the beans were processed for consumption—canned or dried; where the beans were marketed—supermarket, hospital, school, restaurant, or food manufacturer; how they were consumed—in burritos, chili, or salad; how they were prepared—cooked from scratch or reheated from canned; or the socioeconomic characteristics of the consumer that ultimately ate the food.

The Continuing Survey of Food Intakes by Individuals (CSFII) measures foods actually eaten by individuals. The survey records food intake over a specific period of time (two non-consecutive days in 1994-96 using 24-hour dietary recalls). The survey collects demographic information, such as household size, income, race, age, and sex, and information on where a food was purchased, how it was prepared, and where it was eaten, in addition to food-intake data. The CSFII provides information for use in policy formation, regulation, program planning and evaluation, education, and research. For example, data from recent surveys have been used to evaluate the impact of food fortification on nutrient intakes, to estimate exposure to pesticide residues and other contaminants from foods, and to target nutrition assistance and education programs to those who need them most. The data are particularly valuable for measuring the effect of socioeconomic and demographic characteristics on food consumption.

In addition to intake data, ARS also provides technical support documents, including recipes and number of servings relative to USDA Food Guide Pyramid (Pyramid) dietary recommendations. For each food, its recipe lists all ingredients and their weights in grams. The description of the ingredients can be used to distinguish among food products (e.g., dry pinto beans vs. refried beans). The Pyramid serving data show, for each food consumed, the number of servings from 30 food groups. Dry beans and peas are included as a separate "legume" food group.

The recipe files and Pyramid serving data together show the number of servings of a product (e.g., navy beans) provided by a food (e.g., a particular meal package offered at a quick service restaurant). The intake data show where and how much the food was consumed. The 1994-96 CSFII data include a sample weight for each respondent, indicating the number of people the sample represents. The share of a dry bean product by location can be estimated by calculating the weighted sum of the product consumed in each location. Similarly, the socioeconomic and demographic characteristics of the respondents can be used to estimate the consumption share of dry beans by these characteristics.

stews, rice dishes, and casseroles. An estimated one-half of all pintos are sold dry in bags, with the remainder canned.

About 4 percent of Americans reported consuming kidney beans on any given day. Red kidney beans are sold both canned (the majority) and dry and are used in making chili and other Mexican dishes. Navy beans, which are primarily used in making products such as canned baked beans and bean soup, are used by about 4 percent of the population on any given day. Roughly 90 percent of domestic navy beans are canned.

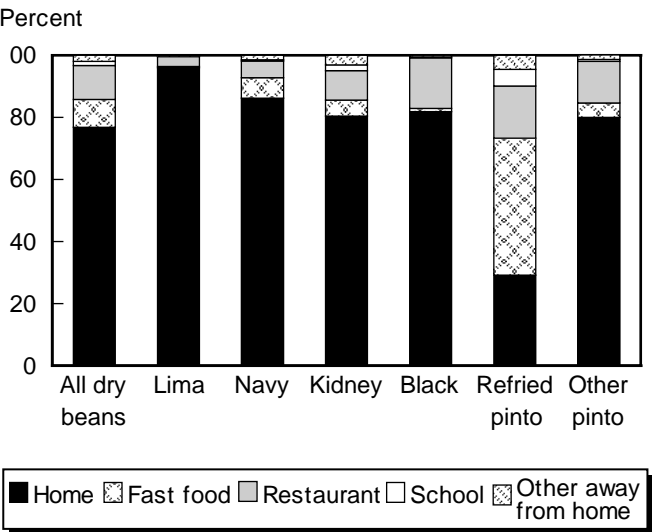
Market Share by Location

In the CSFII, the “at home” and “away from home” delineation is based on where a food was obtained or prepared, not where it was consumed. Food at home is generally obtained at a retail store such as a supermarket, grocery store, or a convenience store. Food away from home is generally purchased from foodservice establishments but can also be obtained in such places as school cafeterias, community feeding programs, or child/adult care centers. Both home and away-from-home food can be consumed away from home. For example, a bagged lunch prepared at home and consumed at work is classified as home food. A commercially prepared pizza delivered and consumed at home is classified as food away from home. Fast food restaurants include self-service establishments and carryout places; other restaurants are places that have wait staff; and school cafeterias include day-care facilities and summer camps. The category “others” is a catch-all category, including such things as community feeding centers, bar/taverns, and vending machines.

In the aggregate, cooked dry beans were mainly obtained at retail stores and considered food at home (table A-2). About 77 percent of all beans were considered to be food at home. Away-from-home sources accounted for 23 percent of the total cooked bean consumer market. Restaurants, excluding fast food and school, were the main locations for consumption of cooked dry beans away from home, accounting for nearly 11 percent of the total bean market. According to the survey, cooked dry beans have very low penetration into the fast food market, with just 9-percent of all dry bean use originating from this segment. Establishments such as Taco Bell, KFC, and Boston Market probably account for a majority of the beans sold in this market segment.

It is interesting to note the differences in food sources between refried (largely pinto) beans and dry/canned pinto beans (figure A-2). While 80 percent of pintos were considered at home food, only 29 percent of refried beans fit this category. Refried beans are heavily consumed in fast food products, with a 44-percent share of the total dry bean market. Another 17 percent of refried beans were sourced from other restaurant establishments. About 13 percent of pinto

Figure A-2
Consumption of dry beans by location



Source: Economic Research Service, USDA.

beans were consumed in food obtained in restaurants other than fast food.

About 86 percent of navy beans are purchased in retail stores for home use, with 14 percent obtained from other sources. Navy beans are traditionally used to manufacture canned baked beans, which are largely purchased at retail stores. The survey also indicated that small quantities are obtained from foodservice establishments, feeding programs, and other away from home entities.

Lima beans are the most concentrated in terms of food source. About 96 percent of lima beans are purchased at retail for at-home consumption. The majority of the remaining limas are purchased at standard (non-fast food) restaurants.

The majority of black beans obtained from away-from-home sources are concentrated in standard restaurant establishments. About 16 percent of black beans are purchased in standard (non-fast food) restaurants. This reflects the dual nature of black beans as both an upscale trendy bean and a basic food. In the United States, black beans have become a favorite of the general populace in the past 10 years, with annual average consumption of about half a pound per person in 1999. Prior to 1990, black beans were produced primarily for the export market, with very little (less than 0.1 pound per capita) consumed domestically.

Regional Dry Bean Use

As has long been postulated by industry researchers, the CFSII showed distinct regional variations in cooked dry bean use both in the aggregate and by bean class. The survey provided detailed breakdowns of cooked dry bean con-

Table A-2--U.S. dry beans: Consumption distribution by major class and total

Item	Population	All dry beans	All limas	Navy/white	All kidney	Black	Refried pinto	Other pinto
Percent								
Food sources:								
Home	97.6 1/	76.8	96.0	86.2	80.4	81.9	29.2	80.0
Away from home	54.8 1/	23.2	4.0	13.8	19.6	18.1	70.8	20.0
Fast food	30.8 1/	9.0	.4	6.6	5.2	1.0	44.1	4.6
Other restaurant	17.3 1/	10.9	3.2	5.3	9.4	16.3	16.8	13.4
School	6.7 1/	1.3	.1	.4	1.9	.3	5.4	.7
Others	12.9 1/	2.0	.4	1.5	3.1	.5	4.5	1.4
Census region:								
Northeast	19.6	10.8	11.0	23.0	19.1	16.8	3.9	4.5
Midwest	23.5	12.9	3.3	28.6	28.6	13.8	14.2	5.4
South	34.9	38.8	43.2	34.0	28.1	54.8	38.7	44.7
West	22.0	37.6	42.5	14.4	24.2	14.5	43.2	45.4
MSA status:								
Metropolitan	32.0	31.5	33.3	39.0	27.8	41.5	31.2	30.9
Suburban	46.9	41.7	43.6	37.6	50.8	28.6	38.1	39.7
Rural	21.1	26.8	23.1	23.4	21.4	29.9	30.7	29.4
Race/ethnic origin:								
White, non-Hispanic	72.6	54.1	55.7	58.2	69.2	70.5	73.6	42.7
Black, non-Hispanic	12.5	9.5	12.6	19.3	10.7	4.1	5.4	7.9
Hispanic	10.5	33.2	30.0	20.0	18.5	19.8	17.1	47.5
Mexican	4.9	21.0	26.0	5.6	4.0	2.5	8.2	35.8
Puerto Rican	1.0	3.1	.7	4.0	5.8	.7	.5	1.3
Other Hispanic	4.6	9.2	3.4	10.4	8.8	16.6	8.3	10.4
Others	4.4	3.2	1.7	2.5	1.6	5.6	3.9	1.9
Asian	2.9	1.8	1.7	2.2	.6	2.6	2.0	.8
Household income as a percentage of poverty:								
0 - 130 percent	19.2	27.5	29.7	25.7	20.9	15.2	18.6	33.0
131 - 185 percent	11.9	14.9	16.7	11.4	15.0	9.1	12.1	15.9
186-299 percent	20.3	20.8	24.8	23.4	17.1	18.5	26.8	22.6
300 percent and above	48.7	36.9	28.9	39.4	46.9	57.1	42.4	28.5
Gender and age:								
Male, all	48.9	60.8	53.9	57.7	61.4	59.8	58.3	63.4
Male, 2-5	4.8	2.2	.9	1.9	1.7	2.0	2.5	2.7
Male, 6-11	4.6	2.9	1.2	2.8	2.7	1.5	4.8	2.7
Male, 12-19	5.8	7.7	4.8	5.6	6.7	3.0	12.6	7.1
Male, 20-59	27.0	41.3	36.0	36.7	41.6	46.4	37.7	43.5
Male, 60 and over	6.8	6.7	11.1	10.7	8.8	6.9	.7	7.4
Female, all	51.1	39.2	46.1	42.3	38.6	40.2	41.7	36.6
Female, 2-5	4.6	1.9	1.6	1.7	.9	1.5	1.7	2.5
Female, 6-11	4.4	2.4	8.1	1.3	2.3	2.7	3.0	2.2
Female, 12-19	5.6	4.6	5.3	6.3	4.6	4.2	10.1	3.0
Female, 20-59	27.7	25.1	21.3	23.4	24.4	24.2	26.3	24.0
Female, 60 and over	8.9	5.1	9.8	6.4	6.4	7.6	.6	4.9

1/ Percent of population consuming at least one food at the specific location.

Source: U.S. Department of Agriculture, Agricultural Research Service., 1998. 1994-96 Continuing Survey of Food Intake by Individuals and 1994-96 Diet and Health Knowledge Survey. CD-ROM. Available from National Technical Information Service, Springfield, VA.

sumption by four Census-defined regions—Northeast, Midwest, South, and West (figure A-3).

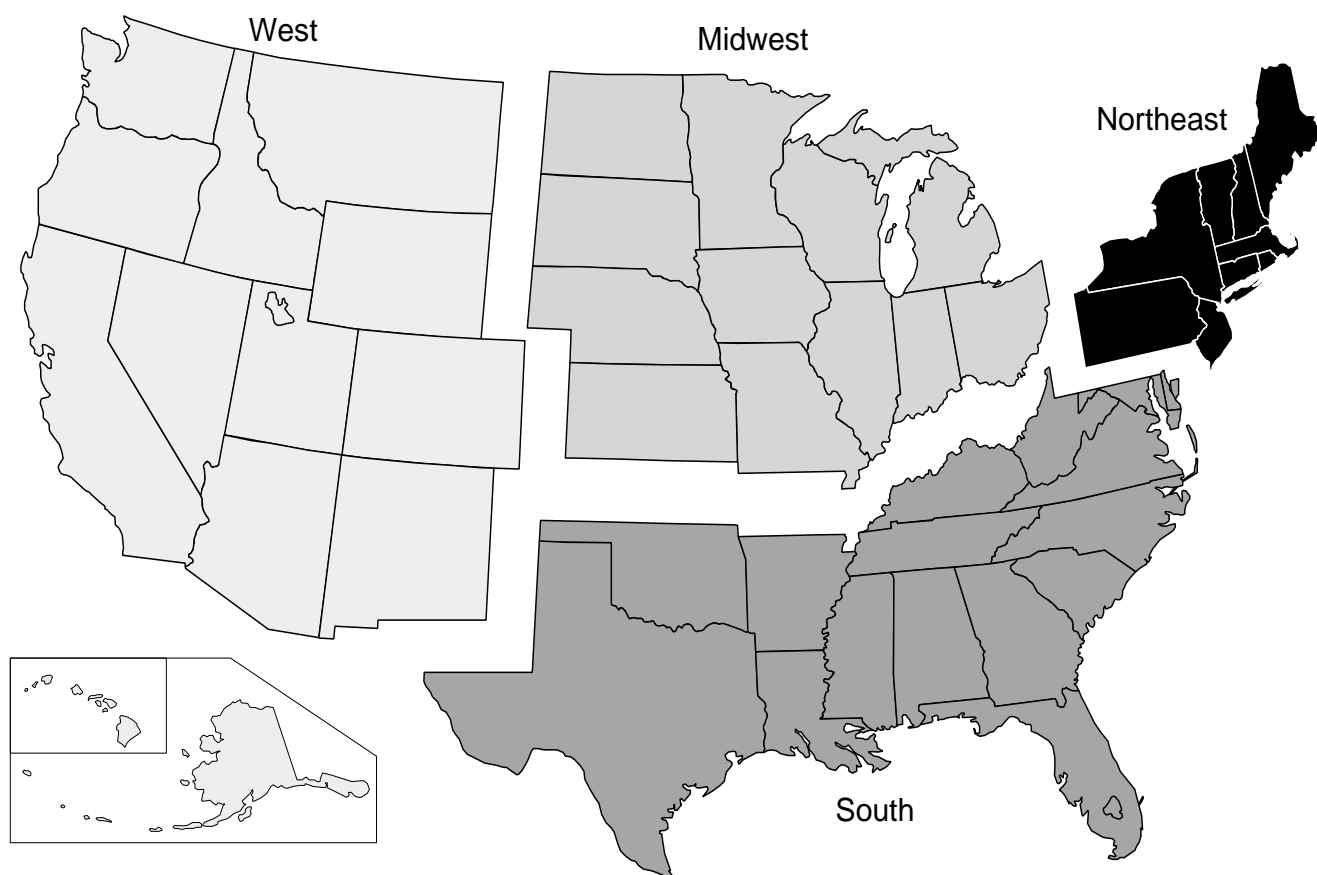
In general, the data indicate that cooked dry bean consumption is greatest in the southern and western areas of the country. About 39 percent of all cooked dry beans are consumed in the Southern States, with another 38 percent consumed in the Western States (figure A-4). California, Texas, and Florida are the three most populous States in these two regions. Census data indicate that 60 percent of the Nation's Hispanic population resided in these States in 1998. The USDA food consumption survey verifies that people of Hispanic heritage

consume proportionately more cooked dry beans than any other ethnic group. This may also largely explain the strong cooked bean consumption in the southern and western regions.

On the other hand, people in the Midwest and Northeast tend to consume proportionately fewer cooked dry beans than the share of the population they make up. About 43 percent of the U.S. population live in these two regions, yet they account for just 24 percent of all cooked dry bean consumption. The Midwest consumed 13 percent of all cooked dry beans, while the remaining 11 percent was used in the Northeastern States (consists of New York, New Jersey,

Figure A-3

U.S. dry bean consumption regions

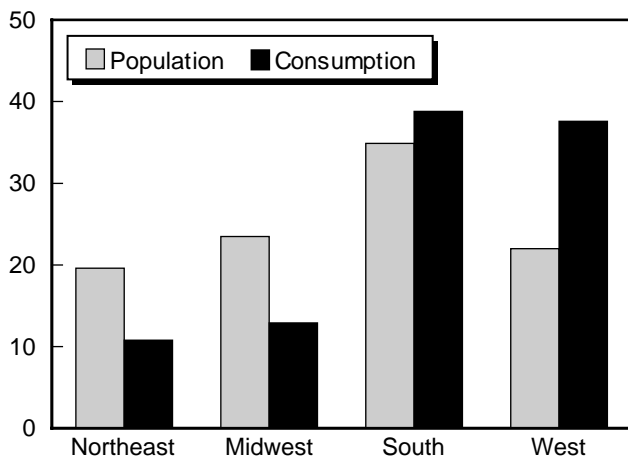


Source: Economic Research Service, USDA.

Figure A-4

U.S. population and dry bean consumption, by region

Percent



Source: Economic Research Service, USDA.

Pennsylvania, and the New England States of Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine).

Bean consumption is also proportionately stronger in rural areas. Rural America has 21 percent of the population but consumes 27 percent of all cooked dry beans. In contrast, 47 percent of the population reside in suburban areas but consume 42 percent of all beans. Kidney beans are most popular in suburban areas, with 51 percent of the national total consumed there. About 42 percent of all black beans are consumed in metropolitan areas, while 38 percent of navy beans are consumed in metropolitan areas.

The survey data also allowed a cursory analysis of regional use patterns for some of the major dry bean classes. A few highlights are as follows:

Navy (pea) beans (largely canned): Consumed most heavily in the South (34 percent) but the Northeast and Midwest

use proportionately more than their overall representation of the population. For example, while 24 percent of the Nation's population resides in the Midwest, this region consumed 29 percent of all navy beans. Navy bean use is lightest in the West, with only 14 percent of national consumption, one of the lowest consumption percentages of all surveyed bean classes in the West.

Black beans: Most popular in the South, with 55 percent of national consumption. Proportionately less is consumed in the other three regions, with the Midwest and the West each accounting for about 14 percent of the national total.

Pinto beans (excluding refried): Very popular in the West and South, with these regions each accounting for 45 percent of use. Pintos are lightly consumed in the Northeast and Midwest, with each region consuming about 5 percent of national volume.

Refried pintos: Most popular in the West (43 percent of consumption) and South, but lightly consumed in the Northeastern States (4 percent).

Lima beans: Most are consumed in the South and West (about 43 percent each), with lesser amounts in the Northeast and only 3 percent in the Midwest.

Kidney beans: One of the most geographically diverse dry bean classes, with use proportionately higher in the Midwest (29 percent) and West and less so in the South. Respondents

in the Northeast, where 20 percent of the population lives, reported consuming 19 percent of all kidney beans.

Garbanzo beans (chickpeas): These are not listed in the table, but garbanzos are an important salad bean and are used in the growing market for prepared, refrigerated hummus. They are used most heavily in the West (50 percent) and are also popular in the East (25 percent). However, only 11 percent of these beans are consumed in the South.

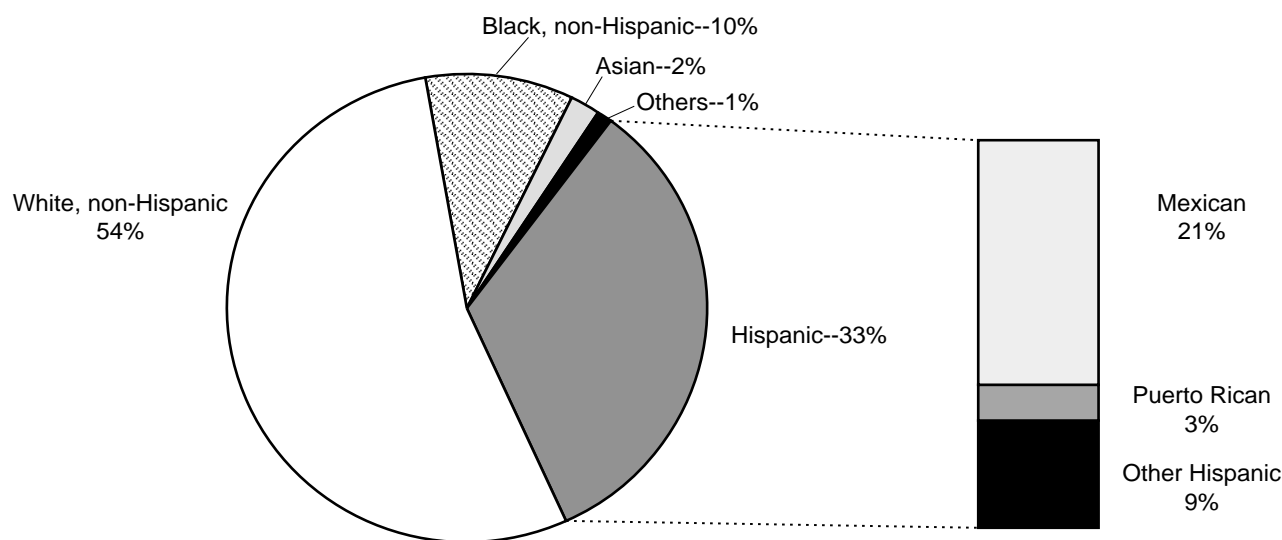
Racial/Ethnic Makeup of Cooked Dry Bean Consumers

For years, it has been assumed that people of Hispanic origin (Mexican, Puerto Rican, and other Hispanic) have been important in determining consumption trends in the dry bean industry. When cooked dry bean consumption began to climb in the early 1980's, market analysts credited a combination of factors, including such things as rising nutritional awareness, the broadening of the Nation's diet, and demographic trends. The U.S. Hispanic population has increased rapidly over the past two decades. In 2000, people of Hispanic origin are projected to account for 11.4 percent of the Nation's population—up from 6.4 percent in 1980. And as the CFSII data confirm, this ethnic group plays an important role in dry bean demand.

Although people of Hispanic origin represented approximately 11 percent of the population, they accounted for 33 percent of all cooked dry bean consumption. Hispanics of Mexican descent were the largest consumers of cooked dry beans, with nearly 21 percent of total volume, more than

Figure A-5

U.S. dry bean consumption by racial/ethnic makeup



Source: Economic Research Service, USDA.

four times their proportion of the population (4.9 percent). Like whites and Asians, non-Hispanic black consumers accounted for proportionately less of national cooked dry bean consumption (9.5 percent) than their population representation (12.5 percent) (figure A-5).

White (non-Hispanic) consumers account for 54 percent of all cooked dry bean use, far less than their proportion of the population (73 percent). Refried pinto, black, and kidney beans are the most popular among the non-Hispanic white population. Among black (non-Hispanic) consumers, black-eye cowpeas (not listed in the table) are the most popular, followed distantly by navy beans. Black consumers account for about 62 percent of blackeye cowpea consumption. Asian consumers favored garbanzo beans (25 percent) and mung beans (70 percent, not listed in the table) but generally accounted for 1 to 3 percent of dry bean use.

People of Hispanic origin are the leading consumers of pinto beans, the largest bean class in the United States. The Census Bureau indicated that there were 28 million people of Hispanic origin in the United States in 1998. This ethnic group consumes nearly half of the pinto beans (excluding refried pintos) used in the United States. They also consume 17 percent of the refried beans (largely pintos). In fact, with the exception of garbanzo beans (5 percent) and blackeye cowpeas (2 percent), Hispanic consumers were important consumers of every bean class studied. Among Hispanics, people of Mexican heritage were the most important consumers of pinto beans (36 percent) and lima beans (26 percent). Hispanics of Puerto Rican heritage favored pink beans (not listed in the tables) while other Hispanics (largely of Caribbean origin) were the most important consumers of black beans (17 percent).

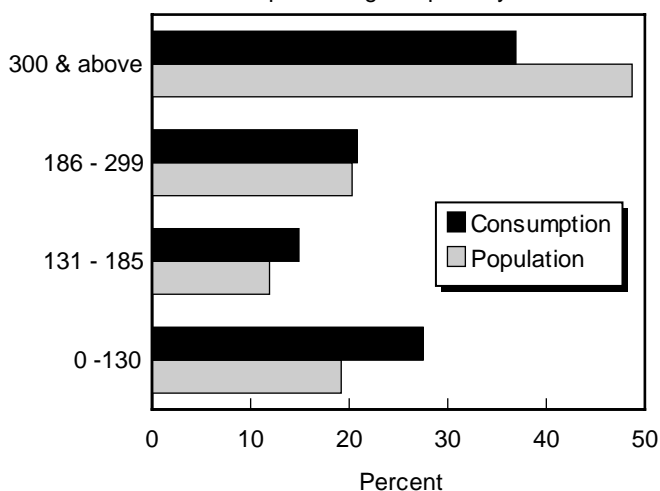
Dry Beans and Income

The CSFII data indicate that low-income Americans consume more cooked dry beans than their better-off counterparts. Household income, measured against the Federal poverty level, is classified into four income brackets in this study. Households in the lowest-income bracket, with income less than 130 percent of the poverty level (the cut-off point for food stamp eligibility), represented 19 percent of the U.S. population and consumed 27 percent of all cooked dry beans, implying that lower income Americans consumed more beans than their better-off counterparts (figure A-6). Individuals in the higher-income bracket, with income above 300 percent of the poverty level, accounted for 49 percent of the U.S. population and consumed 37 percent of cooked dry beans. By dividing the market share by the population share of an income bracket (i.e., 37 percent divided by 49 percent for the highest income bracket), there is a clear, negative relationship between per capita consumption of cooked dry beans and income.

Figure A-6

Dry bean consumption and income

Household income as a percentage of poverty



Source: Economic Research Service, USDA.

The distribution of cooked dry bean consumption by variety also differs by income group. The lowest income individuals consumed a disproportionate share of pinto beans (33 percent) and limas (30 percent), while those with the highest incomes consumed more black beans (57 percent) and garbanzos (74 percent). Dry beans are a relatively inexpensive source of protein and are likely consumed more heavily by the poor than other income groups. However, cooked dry beans are also a culturally important food for consumers of Hispanic descent, who together with African Americans, account for a disproportionate share of the poverty population in the United States. Likewise, garbanzo beans are important salad beans favored by upper income consumers in the West.

Consumption by Gender and Age

Men (perhaps because of their larger caloric intake) consume 61 percent of all cooked dry beans. Accounting for just 27 percent of the population, men between the ages of 20 and 59 consume 41 percent of all cooked dry beans.

Children under the age of 12 represent 18 percent of the population; yet consume just 9 percent of all cooked dry beans. Refried pintos and limas appear to be the most favored bean of this group as they consume nearly 12 percent of the national total for each. For lima beans, girls between the ages of 6 and 11 report consuming 8 percent of all limas, while boys of the same age account for just 1 percent of the total.

Teens represent 11 percent of the population and consume about 12 percent of all cooked dry beans. Teenagers are important consumers of refried beans, with boys and girls both consuming about twice as much as their proportion of

the population. Teenage boys consume 13 percent, with girls right behind at 10 percent. The popularity of fast food restaurants and Mexican-style food among teenagers likely accounts for the high consumption ratio.

Adults between the ages of 20 and 59 represent 55 percent of the population but consume 66 percent of cooked dry beans. Interestingly, females appear to cut back refried bean use (26 percent) when they reach adulthood, while adult men continue to be the largest consumers of refried beans, with 38 percent of the total. While garbanzo beans were most popular among adult women (44 percent), this group consumed 21 to 26 percent of each of the major bean classes studied. With the exception of garbanzo beans, adult males were the leading consumers of every other major bean class. The largest market proportion was for black beans, with adult males consuming 46 percent of the total.

Adults over 60 years of age represent 16 percent of the population and consume 12 percent of all cooked dry beans. Older adults favor blackeye cowpeas (25 percent), lima beans (21 percent), and navy beans (20 percent) but largely avoid products containing refried beans (1 percent).

Conclusion

While we know a great deal about the supply side of the U.S. dry bean market, little is known about the who, what, where, and whys of cooked dry bean consumption. In this study, we show that data from USDA's CSFII can be used to fill this important information gap. The data not only show where and how much of each dry bean variety are consumed, the consumption data are also linked to the consumer's economic, sociologic, and demographic characteristics. The important findings of this study are:

- Slightly more than three-quarters of all cooked dry beans are purchased in retail stores. The at-home vs. away-

from-home use pattern varies greatly among bean variety, with lima beans most concentrated in home use, while refried pinto beans are mostly used in restaurants.

- Cooked dry bean consumption concentrates in the Southern and Western States of the country, accounting for 39 and 38 percent of all bean consumption. This regional consumption pattern is consistent with California, Texas, and Florida being the three populous States in these regions, and they have a high concentration of Hispanic population.
- Rapid growth of the Nation's Hispanic population has indeed contributed to the increasing popularity in cooked dry bean consumption. People of Hispanic heritage represent 11 percent of the U.S. population and account for 33 percent of cooked dry bean consumption. Hispanics of Mexican descent are the largest consumers of cooked dry beans, with nearly 21 percent of total volume—more than four times their proportion of the population. The Nation's Hispanic population is expected to continue rising over the next few decades.
- Cooked dry beans as a whole are favored by lower income households. While the poor tend to consume more pinto and lima beans, black and garbanzo beans could be termed the upscale members of the cooked dry bean community.
- Cooked dry bean consumption varies by age and gender. Men consume more beans than women, likely because of their larger food consumption. As children grow up, they tend to frequent fast food restaurants and develop a taste for Mexican-style food and hence consume more beans.

The lack of information on the demand side of agricultural markets is not unique to dry beans, but also a problem facing most of agriculture. The data and methodology described in this study can also be applied to fill important information gaps for other U.S. agricultural commodities.